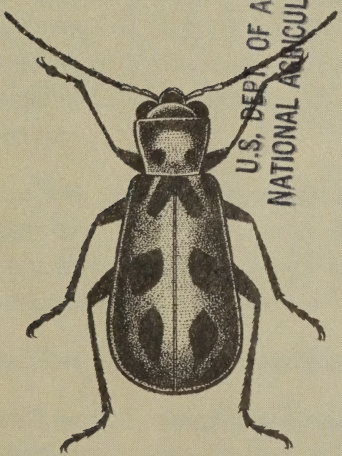
Fruit and Vegetable Insects Research Station

Lesser peachtree borer



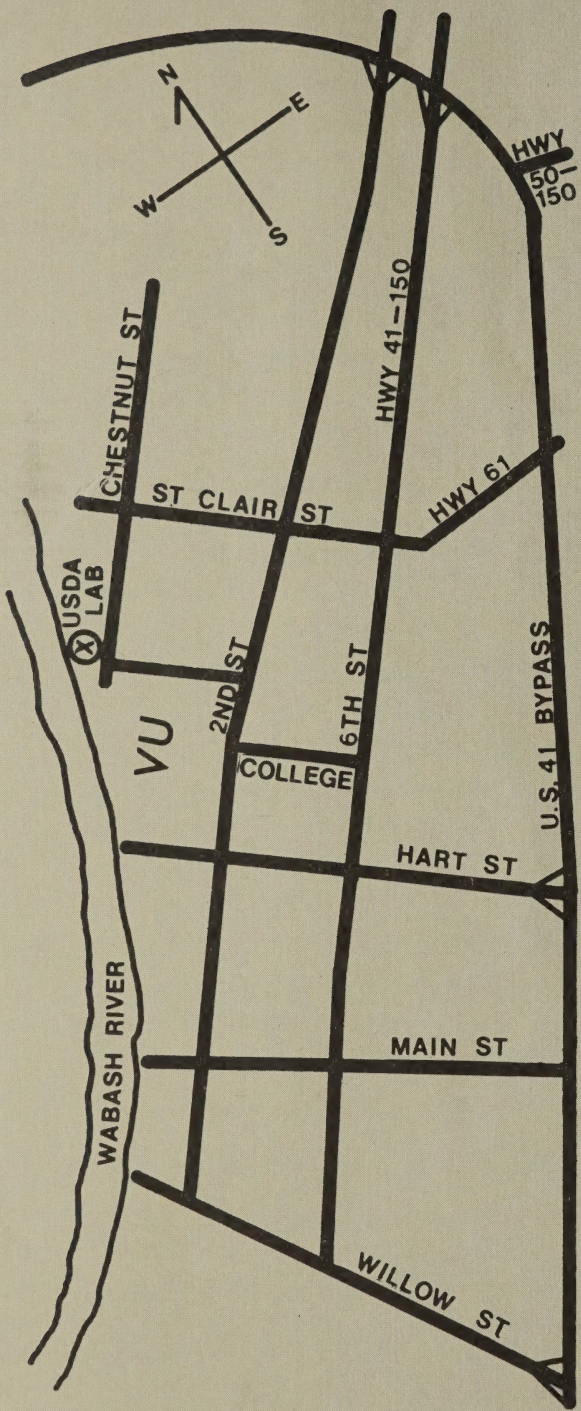
Spotted cucumber beetle

AGRICULTURAL RESEARCH SERVICE
U.S. DEPARTMENT OF AGRICULTURE
Vincennes, Indiana

Research by scientists of USDA's Agricultural Research Service, Vincennes, Ind., is concerned with the development of more effective, practical, and economical methods of controlling insects affecting deciduous fruit crops and vegetables. Researchers develop information for growers and researchers on the biology, ecology, habits, and nutritional requirements of economically important insects as well as the natural enemies and diseases that attack them.

Major Research Programs

Insect	*Investigations*
Apple maggot	✔Studying effects of radiation for sterilizing adult flies to suppress future population growth. ✔Improving trapping methods to capture adult maggots for population surveys. ✔Improving rearing methods of a culture by developing an artificial diet.
Codling moth	✔Developing biological control through use of resistant cultivars, predators, parasites, diseases, and other means. ✔Improving adult trapping methods for better timing of sprays. ✔Improving rearing methods with semisynthetic diets.
Lesser peachtree borer	✔Using a sex pheromone in traps to lure males to demonstrate that, on a large scale, insects can be used for destruction of its own species. ✔Developing a system to disrupt mating by using sex pheromones or inhibitors to reduce field populations. ✔Determining minimal dosages of radiation to sterilize male moths.
Oriental fruit moth	✔Reducing larval damage to peach trees by spraying with bacterial spores and crystals for natural population destruction. ✔Developing rearing methods with semisynthetic diets. ✔Developing an effective trap and sex attractant to monitor field populations of the moth.
Plum curculio	✔Determining behavioral characteristics including sex attractants.
Redbanded leafroller	✔Attempting to reduce its population in apple trees by disrupting the mating process through sprays containing sex pheromone-related compounds. ✔Developing an effective adult trap for use in population surveys. ✔Studying the effects of semisynthetic diets on rearing.
Spotted cucumber beetle Striped cucumber beetle	✔Studying the beetles' biology and ecology. ✔Selecting and developing cultivars of cantaloupe and watermelon that are resistant to the beetles. ✔Investigating artificial means of mass rearing the beetles for research purposes.



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History of the Station

In 1922, at the urging of Professor J. J. Davis, former head of the Department of Entomology at Purdue University, the U.S. Bureau of Entomology established the Vincennes Research Laboratory, then administered by the Division of Deciduous Fruit Insects. Dr. B. A. Porter was assigned as the first director of the new station, which had temporary quarters on Vincennes University campus until 1924 when it was moved to East Locust Street.

Early investigations concerned San Jose scale, peachtree borers, tarnished plant bug, oriental fruit moth, codling moth, and stink bugs and their control with various insecticides and oils. Insecticide residues (arsenicals) were noted early as a problem on apples.

In 1929 the laboratory was moved to 1237 Washington Avenue and large-scale bait-trap studies began. Entomologists investigated, primarily, the codling moth until 1943, when a new problem commanded attention. With the advent of DDT, continuous application of such insecticides to control certain pests resulted in the buildup of minor pests to economic levels.

A Pesticide Chemicals Section was established as a separate unit performing residue analyses on apples, peaches, cherries, grapes, strawberries, honey, peanuts, corn, animal fat, and numerous other products for research laboratories throughout the United States. This research unit was transferred to Beltsville, Md., in 1964.

In 1949, new biological studies and different approaches began in the control of pests. These included biological agents, chemosterilants, and mass rearing on artificial diets. Investigations were expanded to include such pests as mites, rosy apple aphid, and redbanded leafroller. In 1959, the station was relocated to its present quarters on the Vincennes University campus. Later, sex pheromones were added to the program, and these and biological studies have since received primary emphasis. A temporary satellite laboratory was maintained on Washington Island, Wis., from 1969 to 1974 in support of a mass trapping experiment of the lesser peachtree borer. During 1974, vegetable insect investigations were added to the Station's program.

Facilities

The Vincennes Station includes: (1) the main building with four offices, eight laboratories, a library, and storage space; (2) an annex with five biological control rooms; (3) four small greenhouses; (4) Pasco building with two laboratories, an olfactometery room, irradiation room, two work areas, and storage loft; (5) quonset building with two workshops, a large work area, and storage area; (6) chemistry-culture building; (7) cold storage; and (8) a 17-acre farm with apple, pear, and peach trees, and space for vegetable plantings.